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CHD and stroke: Scotland’s pandemics also need co-ordinated and vigorous primary prevention programmes

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Abstract

Further reductions in the incidence and mortality from CHD and stroke in Scotland will be largely dependent upon changes in the three major risk factors – cholesterol, blood pressure and smoking. Vigorous and co-ordinated primary prevention programmes are therefore required. This paper outlines the main elements of such a prevention programme starting in the Scottish Borders. It considers the three major risk factors and discusses local action within high risk groups and within the population at large for each. The importance of considering environmental changes and social supports for change are emphasised, and because of this, the key role of local authorities and other local partners.
Suggestions for action at the national level to encourage and support the growth of such programmes across Scotland are given.

Key words: prevention, coronary heart disease, stroke.

**Introduction**

Scotland has some of the highest rates of coronary heart disease (CHD) and stroke in the developed world. It is fortunate therefore that mortality rates are falling, although they lag behind those of many developed countries (Figure 1).

Following wide consultation on the national CHD & Stroke Task Force Report, a national plan for action has been developed to improve the health service response (1). This aims to relieve the disability and suffering of thousands of Scots with these two diseases, and could also make a substantial contribution to reducing mortality (2). However, the control of risk factors within the population at large is also crucially important and has been estimated to account for 50% of the observed reduction in CHD mortality in Scotland and 80% in Finland (2, 3). In England it has been estimated that a 50% reduction in CHD mortality by 2010 is feasible, 60% of this reduction coming from changes in risk factors in the population, the other 40% resulting from clinical treatments (4).

This paper outlines the main elements of a primary prevention programme, developed in the Scottish Borders and called the “In Fine Fettle” Project, and discusses what is required at the national level to encourage and support local programmes like this to flourish.

**Programme Aim & Focus**

For years the merits of taking a population or a high-risk approach to the primary prevention of CHD were fiercely debated (5,6). However, it is now widely accepted that they are complementary, although this is often not reflected in practice. There is good
evidence for, and a clinical imperative, to treat individuals at very high risk, but this can have only a modest influence on the health of the whole population (7). To have a more substantial impact, population wide interventions are required to alter mean population levels of risk factors.

Choosing risk factors to target requires epidemiological knowledge on which are thought to be causally linked to CHD and stroke, and data on their local prevalence. The major risk factors for CHD have been well documented - serum cholesterol, blood pressure and smoking, and these risk factors are common to stroke. Scotland and the Borders have high levels of all three risk factors (8), particularly serum cholesterol when compared to other European countries. By lowering levels of these three risk factors, for example in 45-64 year old men, an estimated 38% of deaths can be prevented in the Borders (see Figure 2 – based upon the Finnish cohort study (3)). Even lower levels could reduce mortality by up to 75%.

For this reason these risk factors were chosen, alongside physical activity, as those to target, with the overall programme aim being to improve the health and well being of the local population, and to reduce the premature mortality and incidence from these three diseases.

Having identified the overall programme focus and target risk factors a systematic approach to assess local barriers to change was conducted, using the “Precede/Procede model (9). It took into account influences within the individual (levels of knowledge, beliefs, attitudes), their environment (access to healthy food, smoke free public places) and their social network (support from family, teachers, employers). This approach to planning the population interventions emphasised the importance of working closely with local partners, particularly the local authority, and some specific examples appear below. This is entirely consistent with the national policy of community planning and the three tiers of life circumstances, lifestyles and health topics outlined in “Towards a Healthier Scotland” (10).
The main elements of the local programme are described below in relation to serum cholesterol, blood pressure and smoking, and for each both high risk and population approaches.

**Cholesterol**

**High Risk Approach**

A national guideline advocated treatment for those over a 30% risk threshold for a CHD event over 10 years using diet, and if necessary statins, to reduce cholesterol to below 5 mmol/L (11). The potential population health impact, cost effectiveness and total cost of implementation strategies were examined (12) with the result that three target groups for implementation were identified. These were people with diabetes, hypertension, or a strong family history of CHD. In these groups the screening/clinical assessment process is efficient because they are at particularly high risk and therefore the number needed to screen to identify someone over the 30% threshold is low, and they are also in regular contact with health services already or come to their attention. Their relatively small numbers also makes the total cost affordable. Implementation is now starting with additional funding from the Health Board.

**Population Approach**

Reduction in serum cholesterol is the most important factor contributing to the potential improvement in mortality discussed above in the Scottish Borders, and also in England (4). The Scottish mean cholesterol level is relatively high by international comparisons, for example only about 30% of middle age people in the Borders have a serum cholesterol lower than 5mmol/L (13).

Diet is the main cause of these high cholesterol levels and much can be done by a few simple changes (14). Local qualitative research suggests that the public are confused about the main dietary messages and practical steps to take in changing to a healthier diet. Clear and consistent information is therefore required and should focus particularly on
the major sources of saturated fats (15) (Table 1 shows the main sources in the UK). National policy in Scotland has emphasised the need to increase fruit and vegetables consumption more than to modify fat intake (16). This should contribute to reducing cardiovascular mortality and morbidity as well as that for some other diseases, most notably some common cancers. However, more attention to the role of fats is needed if we are to impact on cholesterol levels in the population. Figure 3 shows that changing the type of fat is more effective in reducing serum cholesterol than reducing the total amount of fat in the diet, although ideally both are required (14).

Table 1 - Top ten sources of saturated fats in the UK diet

<table>
<thead>
<tr>
<th>Food source</th>
<th>Percentage of saturated fat in the diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>14</td>
</tr>
<tr>
<td>Cakes, pastries, biscuits</td>
<td>11</td>
</tr>
<tr>
<td>Butter</td>
<td>10</td>
</tr>
<tr>
<td>Meat products</td>
<td>10</td>
</tr>
<tr>
<td>Cheese</td>
<td>9</td>
</tr>
<tr>
<td>Meat</td>
<td>7</td>
</tr>
<tr>
<td>Low fat spreads</td>
<td>4</td>
</tr>
<tr>
<td>Confectionery</td>
<td>3</td>
</tr>
<tr>
<td>Margarine</td>
<td>3</td>
</tr>
<tr>
<td>Bacon and ham</td>
<td>2</td>
</tr>
</tbody>
</table>

In Finland cholesterol measurements are recommended for everyone. If the level is greater than 5 mmol/l, advice is given to change the diet with special attention to the amount of saturated fats. This is not current policy in Scotland, although implementation of the national guideline mentioned above may well encourage more widespread cholesterol measurements. However, even under the existing policy significant numbers of people do have their cholesterol checked – 47% of men and 33% of women aged 45-
64 years old in 1995 (8). Whenever this happens and cholesterol is over 5 mmol/L a priority must be to ensure that appropriate dietary advice and follow up is given. This is an area that would benefit from audit to assess local practice.

**Blood pressure**

**High Risk Approach**

The WHO MONICA study suggests that blood pressure in Scotland in not especially high compared to many other countries (17). Nevertheless, the 1998 Scottish Health Survey showed that 36% of men in Borders were defined as hypertensive (systolic =/> 140 or diastolic =/> 90 mmHg), of whom 34% were on treatment, and 38% of those were controlled (BP <140/90 mmHg) (11). These figures suggest a need to concentrate on all three steps – opportunistic screening, starting treatment and control in those identified.

A local project involving all local general practices and led by the Local Health Care Cooperatives is seeking to address this important area. This project has developed and agreed a local guideline, and an implementation strategy has begun which includes training, audit and practical support within practices.

**Population Approach**

The fact that over one third of the population were defined as hypertensive emphasises the challenge facing primary care services. It also emphasises the importance of population wide actions to modify risk factors that will reduce blood pressure, such as weight control, increasing physical activity and reducing salt intake.

Activity levels in 58% of men and 68% of women in Borders are below those currently recommended (13). A number of existing projects encourage more physical activity, but further efforts are required to influence a larger number in the population, emphasising the benefits of small increases as part of everyday life (taking the stairs, parking on the edge of town etc.). Improving geographical and temporal access to exercise facilities is
felt to be important locally to help overcome a very practical barrier and make the change to a healthier lifestyle easier. The local authority plays a critical role here in relation to leisure centres and swimming pools, but also potentially in improving access to facilities within schools. Other local partners can also help such as the Forestry Commission, the Tourist Board and Enterprise Company.

In 1998 50% of men and 40% of women in Scotland generally added salt at the table and 35% of men and 25% of women before tasting the food (13). A programme to educate people about the health hazard of salt and how to reduce it may be helpful, but given the high percentage of salt intake from manufactured food products action is also essential at the national and UK levels (16).

Smoking

High Risk Approach

A policy of recording all patients’ smoking habits followed by simple advice to quit can be effective for many patients. However, additional support will be needed by some patients and specific services have been developed throughout the local area. One to one counselling and group support from staff specifically trained in motivational interviewing are available in most practices, as well as nicotine replacement therapy. However, the availability of such specialised support needs developing further in Borders as does training for other clinical staff so that referrals are timely and appropriate. Attention to smokers at particularly high risk because of other risk factors is also important, such as diabetics and hypertensives.

Population Approach

Most successful quitters stop smoking by themselves without any special services. Active mass media campaigns like “Quit and Win” can therefore be very effective in encouraging smokers to stop (18) and schools programmes can help to stop young people starting (19).
The health impact of smoking is probably well understood now, but the reversibility of most of the health risks and the risks to others through passive smoking, perhaps less so. These are two important areas identified for action locally. Proactive work with the local media, voluntary restriction on smoking in cafes and restaurants and more effective implementation of school and workplace policies are being planned. Legislation to ban advertising and prohibit smoking in public places is required, and while the former is on the horizon, the latter is certainly not.

Towards co-ordinated and vigorous primary prevention programmes throughout Scotland:

barriers and potential solutions

The Borders In Fine Fettle Project described above is one of several primary prevention programmes across Scotland. What can be done to support them and to encourage other areas to develop similar programmes to help prevent the thousands of premature deaths each year and the suffering of many more?

**Product Champions & Priority**

Until recently the NHS in Scotland has focused on running the health service and no organisation has concentrated upon population health. However, national policy has changed following Towards a Healthier Scotland (10). Far greater emphasis is being given to health improvement and this is explicitly the responsibility of the new unified NHS Boards — “NHS Boards have health improvement as a prime purpose. They need to identify and influence the major determinants of health in their area.” (20). Therefore, arguably, we now have a corporate “Product Champion” with a policy of greater priority for improving health. However, rhetoric and reality can be far apart. Nevertheless, the advent of the Health Improvement Fund is promising, money from tobacco taxation ring-fenced for public health priorities. It has enabled the creation of the Public Health Institute for Scotland, four national demonstrator projects (one focused on the prevention of CHD – *Have a Heart Paisley*) and a number of projects at Health Board level,
including this project in the Borders. Further development of this approach is crucial and a test of central commitment to the health improvement agenda.

Evidence is Sufficient to Act

The evidence on the major risk factors for CHD and stroke is strong and not disputed. There is good evidence in high risk groups and populations that control of risk factors reduces mortality and morbidity (21, 22). There is less clear evidence on how to reduce the risk factors in the population at large. This lack of clear evidence mirrors the poorer quality of evidence on how to affect clinical practice (23). However, the latter is rarely seen as a reason for holding back on attempting to implement good practice, but rather for evaluating and sharing approaches as we go. Likewise with population primary prevention. We should not wait for national demonstrator projects to give us all the answers, because they will not, although we should try to learn from their approaches and experiences.

Better Co-ordination – a Managed Prevention Network?

Learning from each other would be easier if there was a network for those working in this area nationally. Given the impact of these pandemics in Scotland and the importance of preventing them it is remarkable that there is not such a network. However, the new Public Health Institute for Scotland is about to convene one. The exact remit of this network is not clear as yet, but should extend beyond learning from each other into a more positive co-ordination of initiatives, particularly at different levels – national, regional and local. We can also perhaps learn from the clinical service concept of the Managed Clinical Network, introduced by the Acute Service Review (24).

Guidelines and Assessment of Standards

Current national guideline production is heavily biased towards clinical treatments and randomised controlled trials (11), but paradoxically all the major diseases in Scotland can only be tackled effectively if there is also action at the population level. Do we need population prevention guidelines and is this another role for the Public Health Institute
for Scotland? Once we have clear statements of good practice we are better able to assess local standards, and to do this thoroughly we perhaps need an equivalent of the Clinical Standards Board for Scotland.

Certainly, the confusion over risk factor targets and the means to monitor them should be addressed and would help monitoring of progress nationally and locally (see table 2)

Table 2 - Importance of risk factors, setting of national targets and availability of data to monitor targets agreed

<table>
<thead>
<tr>
<th>&quot;RISK FACTOR&quot;</th>
<th>Importance</th>
<th>National target</th>
<th>Monitoring data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol</td>
<td>+++</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Diet - food frequency*</td>
<td>+++</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Diet- nutrient intake*</td>
<td>+++</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(only at UK level)</td>
</tr>
<tr>
<td>Smoking</td>
<td>+++</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>+++</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Exercise</td>
<td>++</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Strictly speaking not risk factors but linked to cholesterol.

Monitoring data in population available from Scottish Health Survey, except for nutrient intake when it is the UK National Food Survey.
Integration of Theoretical Approaches

Fortunately we have moved on from the approach in the 70's and 80's of telling people what was good for them and blaming the victim when they didn't comply. Community development approaches have emphasised the importance of active participation of local people, and working with them to address the health problems they face. This is helpful, but community development alone is not enough. What we now need is a combination of such bottom-up approaches and the more top-down. We need clear programme aims and risk factor targets, combined with the evidence on approaches that have worked, and the involvement of local people and communities to identify local barriers and local solutions to overcome them (25).

Finally, we should not become exclusively focused upon inequalities in health, or on work addressing life circumstances with local partner agencies. A focus upon disadvantaged communities is important because of their higher rates of CHD and stroke, we must recognise the challenging barriers to change that they face and support them in addressing them. However, a focus only on these communities suffers from the limited population impact of other high risk group approaches. The need to reduce inequalities in health should not prevent us from taking action to reduce the mean risk factors levels in the whole population, where the greatest benefit will come in terms of reducing mortality and morbidity. We must not forget the impact early adopters have in bringing about wider social change (26), nor the fact that everyone in Scotland is at high risk of CHD and stroke and all deserve the best programmes available in the world.

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References


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